

SEQUENCE LISTING

1) GENERAL INFORMATION:

(i) APPLICANT: DELEYS, ROBERT J
POLLET, DIRK
MAERTENS, GEERT
VAN HEUVERSWUN, HUGO

(ii) TITLE OF INVENTION: SYNTHETIC ANTIGENS FOR THE DETECTION OF
ANTIBODIES TO HEPATITIS C VIRUS

(iii) NUMBER OF SEQUENCES: 23

(iv) CORRESPONDENCE ADDRESS:
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(E) COUNTRY: USA
(F) ZIP: 22201

(v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: US 08/391,671
(B) FILING DATE: 21-FEB-1995
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:
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(B) FILING DATE: 14-OCT-1992

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(B) FILING DATE: 13-DEC-1991

(vii) PRIOR APPLICATION DATA:
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(B) FILING DATE: 14-DEC-1990

(viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: SADOFF, B.J.
(B) REGISTRATION NUMBER: 36,663
(C) REFERENCE/DOCKET NUMBER: 1487-5

(ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: 7038164000
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(-) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 amino acids

205110-55644001

- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Met Ser Thr Ile Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15
Arg Arg Pro Gln
20

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val
1 5 10 15
Lys Phe Pro Gly
20

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Arg Asn Thr Asn Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly
1 5 10 15

Gln Ile Val Gly
20

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr
1 5 10 15

Ser Glu Arg Ser
20

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
1 5 10 15

Ile Pro Lys Val
20

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Arg Arg Gln Pro Ile Pro Lys Val Arg Arg Pro Glu Gly Arg Thr Trp
1 5 10 15

Ala Gln Pro Gly
20

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu Tyr Gly Asn
1 5 10 15

Glu Gly Cys Gly
20

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg
1 5 10 15

Glu Phe Asp Glu
20

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu
1 5 10 15

Glu Cys Ser Gln
20

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gly
1 5 10 15

Met Met Leu Ala
20

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln
1 5 10 15

Phe Lys Gln Lys
20

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu
1 5 10 15

Gly Leu Leu Gln
20

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala
1 5 10 15

Ser Arg Gln Ala
20

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val
1 5 10 15

Ile Ala Pro Ala
20

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser
1 5 10 15

Arg Arg Phe Ala
20

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg
1 5 10 15

Pro Asp Tyr Asn
20

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys
1 5 10 15

Lys Pro Asp Tyr
20

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His Gly Cys
1 5 10 15

Pro Leu Pro Pro
20

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro
1 5 10 15

Pro Arg Lys Lys
20

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

20570 5544001

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO: 23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2894 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

Met Ser Thr Ile Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
35 40 45
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60
Ile Pro Lys Val Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
65 70 75 80
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
85 90 95
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
100 105 110
Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125
Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu
130 135 140
Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160
Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile

165										170					175				
Phe	Leu	Leu	Ala	Leu	Leu	Ser	Cys	Leu	Thr	Val	Pro	Ala	Ser	Ala	Tyr				
			180					185					190						
Gln	Val	Arg	Asn	Ser	Thr	Gly	Leu	Tyr	His	Val	Thr	Asn	Asp	Cys	Pro				
		195					200					205							
Asn	Ser	Ser	Ile	Val	Tyr	Glu	Ala	His	Asp	Ala	Ile	Leu	His	Thr	Pro				
	210					215					220								
Gly	Cys	Val	Pro	Cys	Val	Arg	Glu	Gly	Asn	Val	Ser	Arg	Cys	Trp	Val				
225					230						235				240				
Ala	Met	Thr	Pro	Thr	Val	Ala	Thr	Arg	Asp	Gly	Lys	Leu	Pro	Ala	Thr				
				245					250					255					
Gln	Leu	Arg	Arg	His	Ile	Asp	Leu	Leu	Val	Gly	Ser	Ala	Thr	Leu	Cys				
			260					265					270						
Ser	Ala	Leu	Tyr	Val	Gly	Asp	Leu	Cys	Gly	Ser	Val	Phe	Leu	Ile	Gly				
		275					280					285							
Gln	Leu	Phe	Thr	Phe	Ser	Pro	Arg	Arg	His	Trp	Thr	Thr	Gln	Gly	Cys				
		290				295						300							
Asn	Cys	Ser	Ile	Tyr	Pro	Gly	His	Ile	Thr	Gly	His	Arg	Met	Ala	Trp				
305					310					315					320				
Asp	Met	Met	Met	Asn	Trp	Ser	Pro	Thr	Ala	Ala	Leu	Val	Met	Ala	Gln				
				325					330					335					
Leu	Leu	Arg	Ile	Pro	Gln	Ala	Ile	Leu	Asp	Met	Ile	Ala	Gly	Ala	His				
			340					345					350						
Trp	Gly	Val	Leu	Ala	Gly	Ile	Ala	Tyr	Phe	Ser	Met	Val	Gly	Asn	Trp				
		355					360					365							
Ala	Lys	Val	Leu	Val	Val	Leu	Leu	Leu	Phe	Ala	Gly	Val	Asp	Ala	Glu				
		370				375					380								
Thr	Ile	Val	Ser	Gly	Gly	Gln	Ala	Ala	Arg	Ala	Met	Ser	Gly	Leu	Val				
385					390						395				400				
Ser	Leu	Phe	Thr	Pro	Gly	Ala	Lys	Gln	Asn	Ile	Gln	Leu	Ile	Asn	Thr				
				405					410					415					
Asn	Gly	Ser	Trp	His	Ile	Asn	Ser	Thr	Ala	Leu	Asn	Cys	Asn	Glu	Ser				
			420					425					430						
Leu	Asn	Thr	Gly	Trp	Leu	Ala	Gly	Leu	Ile	Tyr	Gln	His	Lys	Phe	Asn				
		435					440					445							
Ser	Ser	Gly	Cys	Pro	Glu	Arg	Leu	Ala	Ser	Cys	Arg	Pro	Leu	Thr	Asp				
		450				455					460								
Phe	Asp	Gln	Gly	Trp	Gly	Pro	Ile	Ser	Tyr	Ala	Asn	Gly	Ser	Gly	Pro				
465					470						475				480				
Asp	Gln	Arg	Pro	Tyr	Cys	Trp	His	Tyr	Pro	Pro	Lys	Pro	Cys	Gly	Ile				

485

490

495

Val	Pro	Ala	Lys	Ser	Val	Cys	Gly	Pro	Val	Tyr	Cys	Phe	Thr	Pro	Ser
			500					505					510		
Pro	Val	Val	Val	Gly	Thr	Thr	Asp	Arg	Ser	Gly	Ala	Pro	Thr	Tyr	Ser
		515					520					525			
Trp	Gly	Glu	Asn	Asp	Thr	Asp	Val	Phe	Val	Leu	Asn	Asn	Thr	Arg	Pro
	530					535					540				
Pro	Leu	Gly	Asn	Trp	Phe	Gly	Cys	Thr	Trp	Met	Asn	Ser	Thr	Gly	Phe
545					550					555					560
Thr	Lys	Val	Cys	Gly	Ala	Pro	Pro	Cys	Val	Ile	Gly	Gly	Ala	Gly	Asn
				565					570					575	
Asn	Thr	Leu	His	Cys	Pro	Thr	Asp	Cys	Phe	Arg	Lys	His	Pro	Asp	Ala
			580					585					590		
Thr	Tyr	Ser	Arg	Cys	Gly	Ser	Gly	Pro	Trp	Ile	Thr	Pro	Arg	Cys	Leu
		595					600					605			
Val	Asp	Tyr	Pro	Tyr	Arg	Leu	Trp	His	Tyr	Pro	Cys	Thr	Ile	Asn	Tyr
	610					615					620				
Thr	Ile	Phe	Lys	Ile	Arg	Met	Tyr	Val	Gly	Gly	Val	Glu	His	Arg	Leu
625					630					635					640
Glu	Ala	Ala	Cys	Asn	Trp	Thr	Arg	Gly	Glu	Arg	Cys	Asp	Leu	Glu	Asp
				645					650					655	
Arg	Asp	Arg	Ser	Glu	Leu	Ser	Pro	Leu	Leu	Leu	Thr	Thr	Thr	Gln	Trp
			660					665						670	
Gln	Val	Leu	Pro	Cys	Ser	Phe	Thr	Thr	Leu	Pro	Ala	Leu	Ser	Thr	Gly
		675					680					685			
Leu	Ile	His	Leu	His	Gln	Asn	Ile	Val	Asp	Val	Gln	Tyr	Leu	Tyr	Gly
	690					695					700				
Val	Gly	Ser	Ser	Ile	Ala	Ser	Trp	Ala	Ile	Lys	Trp	Glu	Tyr	Val	Val
705					710					715					720
Leu	Leu	Phe	Leu	Leu	Leu	Ala	Asp	Ala	Arg	Val	Cys	Ser	Cys	Leu	Trp
				725					730					735	
Met	Met	Leu	Leu	Ile	Ser	Gln	Ala	Glu	Ala	Ala	Leu	Glu	Asn	Leu	Val
			740					745					750		
Ile	Leu	Asn	Ala	Ala	Ser	Leu	Ala	Gly	Thr	His	Gly	Leu	Val	Ser	Phe
		755					760					765			
Leu	Val	Phe	Phe	Cys	Phe	Ala	Trp	Tyr	Leu	Lys	Gly	Lys	Trp	Val	Pro
		770				775					780				
Gly	Ala	Val	Tyr	Thr	Phe	Tyr	Gly	Met	Trp	Pro	Leu	Leu	Leu	Leu	Leu
785					790					795					800
Leu	Ala	Leu	Pro	Gln	Arg	Ala	Tyr	Ala	Leu	Asp	Thr	Glu	Val	Ala	Ala

805										810					815				
Ser	Cys	Gly	Gly	Val	Val	Leu	Val	Gly	Leu	Met	Ala	Leu	Thr	Leu	Ser				
			820					825						830					
Pro	Tyr	Tyr	Lys	Arg	Tyr	Ile	Ser	Trp	Cys	Leu	Trp	Trp	Leu	Gln	Tyr				
			835				840						845						
Phe	Leu	Thr	Arg	Val	Glu	Ala	Gln	Leu	His	Val	Trp	Ile	Pro	Pro	Leu				
			850			855					860								
Asn	Val	Arg	Gly	Gly	Arg	Asp	Ala	Val	Ile	Leu	Leu	Met	Cys	Ala	Val				
			865		870					875					880				
His	Pro	Thr	Leu	Val	Phe	Asp	Ile	Thr	Lys	Leu	Leu	Leu	Ala	Val	Phe				
				885				890						895					
Gly	Pro	Leu	Trp	Ile	Leu	Asp	Ala	Ser	Leu	Leu	Lys	Val	Pro	Tyr	Phe				
			900					905					910						
Val	Arg	Val	Gln	Gly	Leu	Leu	Arg	Phe	Cys	Ala	Leu	Ala	Arg	Lys	Met				
			915				920					925							
Ile	Gly	Gly	His	Tyr	Val	Gln	Met	Val	Ile	Ile	Lys	Leu	Gly	Ala	Leu				
			930			935					940								
Thr	Gly	Thr	Tyr	Val	Tyr	Asn	His	Leu	Thr	Pro	Leu	Arg	Asp	Trp	Ala				
					950					955					960				
His	Asn	Gly	Leu	Arg	Asp	Leu	Ala	Val	Ala	Val	Glu	Pro	Val	Val	Phe				
				965				970						975					
Ser	Gln	Met	Glu	Thr	Lys	Leu	Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala				
			980					985					990						
Cys	Gly	Asp	Ile	Ile	Asn	Gly	Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg				
			995				1000					1005							
Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	Gly	Met	Val	Ser	Lys	Gly	Trp	Arg				
			1010			1015					1020								
Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ala	Gln	Gln	Thr	Arg	Gly	Leu	Leu				
			1025			1030				1035					1040				
Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu				
				1045				1050					1055						
Gly	Glu	Val	Gln	Ile	Val	Ser	Thr	Ala	Ala	Gln	Thr	Phe	Leu	Ala	Thr				
			1060					1065					1070						
Cys	Ile	Asn	Gly	Val	Cys	Trp	Thr	Val	Tyr	His	Gly	Ala	Gly	Thr	Arg				
			1075				1080					1085							
Thr	Ile	Ala	Ser	Pro	Lys	Gly	Pro	Val	Ile	Gln	Met	Tyr	Thr	Asn	Val				
			1090			1095					1100								
Asp	Gln	Asp	Leu	Val	Gly	Trp	Pro	Ala	Pro	Gln	Gly	Ser	Arg	Ser	Leu				
			1105			1110				1115					1120				
Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His				

1135

Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr

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1455

Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	
			1460						1465						1470	
Glu	Thr	Ile	Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	
		1475					1480					1485				
Gly	Arg	Thr	Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	
		1490				1495					1500					
Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	
	1505				1510					1515					1520	
Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	
			1525						1530					1535		
Val	Arg	Leu	Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	
		1540						1545					1550			
Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	
		1555					1560					1565				
Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gly	Ser	Gly	Glu	Asn	Leu	Pro	
	1570					1575					1580					
Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	
	1585				1590					1595					1600	
Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	
			1605						1610					1615		
Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	
			1620					1625					1630			
Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	
		1635					1640					1645				
Met	Ser	Ala	Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	
	1650					1655					1660					
Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	
	1665				1670					1675					1680	
Val	Ile	Val	Gly	Arg	Val	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	
			1685						1690					1695		
Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	
		1700						1705					1710			
Gln	His	Leu	Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	
		1715					1720					1725				
Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	
	1730					1735					1740					
Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	
	1745				1750					1755					1760	
Trp	Ala	Lys	His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	

1765

1770

1775

Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala
1780 1785 1790

Phe Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu
1795 1800 1805

Phe Asn Ile Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly
1810 1815 1820

Ala Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly
1825 1830 1835 1840

Ser Val Gly Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly
1845 1850 1855

Ala Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu
1860 1865 1870

Val Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser
1875 1880 1885

Pro Gly Ala Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg
1890 1895 1900

His Val Gly Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile
1905 1910 1915 1920

Ala Phe Ala Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro
1925 1930 1935

Glu Ser Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr
1940 1945 1950

Val Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys
1955 1960 1965

Thr Thr Pro Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile
1970 1975 1980

Cys Glu Val Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met
1985 1990 1995 2000

Pro Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys
2005 2010 2015

Gly Val Trp Arg Val Asp Gly Ile Met His Thr Arg Cys His Cys Gly
2020 2025 2030

Ala Glu Ile Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly
2035 2040 2045

Pro Arg Thr Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala
2050 2055 2060

Tyr Thr Thr Gly Pro Cys Thr Arg Leu Pro Ala Pro Asn Tyr Thr Phe
2065 2070 2075 2080

Ala Leu Trp Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val

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2085

2090

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Gly Asp Phe His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys
 2100 2105 2110
 Pro Cys Gln Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val
 2115 2120 2125
 Arg Leu His Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu
 2130 2135 2140
 Val Ser Phe Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu
 2145 2150 2155 2160
 Pro Cys Glu Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr
 2165 2170 2175
 Asp Pro Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg
 2180 2185 2190
 Gly Ser Pro Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala
 2195 2200 2205
 Pro Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala
 2210 2215 2220
 Glu Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn
 2225 2230 2235 2240
 Ile Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe
 2245 2250 2255
 Asp Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala
 2260 2265 2270
 Glu Ile Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp
 2275 2280 2285
 Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro
 2290 2295 2300
 Asp Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys
 2305 2310 2315 2320
 Ser Pro Pro Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr
 2325 2330 2335
 Glu Ser Thr Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe
 2340 2345 2350
 Gly Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser
 2355 2360 2365
 Ser Glu Pro Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser
 2370 2375 2380
 Tyr Ser Ser Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu
 2385 2390 2395 2400
 Ser Asp Gly Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp

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2405										2410				2415				
Val	Val	Cys	Cys	Ser	Met	Ser	Tyr	Ser	Trp	Thr	Gly	Ala	Cys	Val	Thr			
			2420						2425					2430				
Pro	Cys	Ala	Ala	Glu	Glu	Gln	Lys	Leu	Pro	Ile	Asn	Ala	Leu	Ser	Asn			
		2435					2440					2445						
Ser	Leu	Leu	Arg	His	His	Asn	Leu	Val	Tyr	Ser	Thr	Thr	Ser	Arg	Ser			
	2450					2455					2460							
Ala	Cys	Gln	Arg	Gln	Lys	Lys	Val	Thr	Phe	Asp	Arg	Leu	Gln	Val	Leu			
2465					2470					2475					2480			
Asp	Ser	His	Tyr	Gln	Asp	Val	Leu	Lys	Glu	Val	Lys	Ala	Ala	Ala	Ser			
				2485					2490						2495			
Lys	Val	Lys	Ala	Asn	Leu	Leu	Ser	Val	Glu	Glu	Ala	Cys	Ser	Leu	Thr			
			2500					2505					2510					
Pro	Pro	His	Ser	Ala	Lys	Ser	Lys	Phe	Gly	Tyr	Gly	Ala	Lys	Asp	Val			
		2515					2520					2525						
Arg	Cys	His	Ala	Arg	Lys	Ala	Val	Thr	His	Ile	Asn	Ser	Val	Trp	Lys			
	2530					2535					2540							
Asp	Leu	Leu	Glu	Asp	Asn	Val	Thr	Pro	Ile	Asp	Thr	Thr	Ile	Met	Ala			
2545					2550					2555					2560			
Lys	Asn	Glu	Val	Phe	Cys	Val	Gln	Pro	Glu	Lys	Gly	Gly	Arg	Lys	Pro			
				2565					2570					2575				
Ala	Arg	Leu	Ile	Val	Phe	Pro	Asp	Leu	Gly	Val	Arg	Val	Cys	Glu	Lys			
			2580					2585					2590					
Met	Ala	Leu	Tyr	Asp	Val	Val	Thr	Lys	Leu	Pro	Leu	Ala	Val	Met	Gly			
	2595						2600					2605						
Ser	Ser	Tyr	Gly	Phe	Gln	Tyr	Ser	Pro	Gly	Gln	Arg	Val	Glu	Phe	Leu			
	2610					2615					2620							
Val	Gln	Ala	Trp	Lys	Ser	Lys	Lys	Thr	Pro	Met	Gly	Phe	Ser	Tyr	Asp			
2625					2630					2635					2640			
Thr	Arg	Cys	Phe	Asp	Ser	Thr	Val	Thr	Glu	Ser	Asp	Ile	Arg	Thr	Glu			
				2645					2650					2655				
Glu	Ala	Ile	Tyr	Gln	Cys	Cys	Asp	Leu	Asp	Pro	Gln	Ala	Arg	Val	Ala			
			2660					2665					2670					
Ile	Lys	Ser	Leu	Thr	Glu	Arg	Leu	Tyr	Val	Gly	Gly	Pro	Leu	Thr	Asn			
		2675					2680					2685						
Ser	Arg	Gly	Glu	Asn	Cys	Gly	Tyr	Arg	Arg	Cys	Arg	Ala	Ser	Gly	Val			
	2690					2695					2700							
Leu	Thr	Thr	Ser	Cys	Gly	Asn	Thr	Leu	Thr	Cys	Tyr	Ile	Lys	Ala	Arg			
2705					2710					2715					2720			
Ala	Ala	Cys	Arg	Ala	Ala	Gly	Leu	Gln	Asp	Cys	Thr	Met	Leu	Val	Cys			

2725

2730

2735

Gly Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp
2740 2745 2750

Ala Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala
2755 2760 2765

Pro Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr
2770 2775 2780

Ser Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg
2785 2790 2795 2800

Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala
2805 2810 2815

Trp Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile
2820 2825 2830

Ile Met Phe Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His
2835 2840 2845

Phe Phe Ser Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp
2850 2855 2860

Cys Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro
2865 2870 2875 2880

Pro Ile Ile Gln Arg Leu Gly Cys Pro Glu Arg Leu Ala Ser
2885 2890

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